3.3 SURFACE WATER

3.3.1 Applicable Sections in FERC Documents

Please refer to Section 3.1 in the FERC Final EIS and Resource Report 2, Water Use and Quality, in Exhibit F-1 of GSX-US's original application to FERC.

3.3.2 Issue 6: Impaired Waterbodies~~1~~

Issue Summary

Description of Problem

The discussion of existing conditions for surface water quality in the Final EIS is three sentences, while the marine water quality discussion is almost two pages. The existing condition of surface waterbodies is at least as important as marine waters. At a minimum, the nine waterbodies listed as impaired under 303(d) should be identified along with their problems.

Ecology Requirement

Include an expanded discussion of existing surface water conditions to allow a reasonable assessment of potential impacts in the environmental review.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

FERC's Resource Report 2, Water Use and Quality, indicates the GSX project will cross nine waterbodies that are considered impaired under Section 303(d) of the Clean Water Act: Sumas River, Johnson Creek, Squaw Creek, Fishtrap Creek, Bender Creek, Bertrand Creek, South Fork Dakota Creek, tributary to South Fork Dakota Creek at MP 22.17, and California Creek. This report was based on a 1998 list from Ecology's Web site. In 2002, however, Ecology developed a map of the 303(d) reaches for each affected stream in Water Resource Inventory Area (WRIA) 1; this map is available at http://www.ecy.wa.gov/services/gis/maps/wria/303d/w1a-303d.pdf. When the GSX project pipeline route is overlaid on this map, it appears only six 303(d) stream reaches will be encountered, as listed in Table 3-1.

The GSX project route would cross the Sumas River and Bertrand Creek at considerable distances upstream from the contaminated section shown on the WRIA 1 map, and between two contaminated reaches of the South Fork Dakota Creek. Two streams (tributary to South Fork Dakota Creek at MP 22.17 and California Creek) that were reported in Resource Report 2 to contain contaminated sediments apparently do not. However, the WRIA 1 map shows that two streams (tributary to Johnson Creek at MP 5.5 and Double Ditch Creek) that were not included in the FERC Resource Report contain contaminated sediments at the GSX project crossings.

Of the six waterbodies listed above, three (Johnson Creek, Fishtrap Creek, and Double Ditch Creek) will be crossed using HDD or conventional bore trenchless techniques, thereby avoiding possible resuspension of contaminated sediments. Three streams will be crossed using open-cut methods: a tributary to Johnson Creek at MP 5.5, Squaw Creek, and Bender Creek. GSX-US proposes to cross the tributary to Johnson Creek at MP 5.5 with the open cut, wet ditch technique and Squaw and Bender creeks with the open-cut, flume technique. There is a potential for limited sediment resuspension by the open cut techniques, but because all three streams at these crossings are channelized, the amount of pre-construction sediment deposition would be low. In addition, the flume crossing technique will affect a very short reach of stream. The sandbag dams across the stream at each end of the flume will retain turbidity between the dams until the dams are removed. GSX-US proposes to further minimize the amount of resuspended sediment by installing clean gravel in the upper 1 foot of trench backfill in the streambed and by placing erosion-control fabric on the reconstructed streambanks.

If the trenchless crossing technique fails at any of the streams at which it is proposed, the streams would have to be crossed with open-cut techniques. In that case, the potential for sediment resuspension would be similar to that for the streams discussed above.

Table 3-1 summarizes the information regarding the 303(d) impairment for the six crossings.

Table 3-1: 303(d) Stream Crossings

Milepost	Waterbody	303(d) Listing Stream Reach and Impairment	Crossing Method
5.50	Tributary to Johnson Creek (Clearbrook Creek)	CT99ZQ Fecal coliform, dissolved O_2	open-cut, wet ditch
6.19	Johnson Creek	PL 43AX Fecal coliform, dissolved O_2	horizontal directional drill
8.24	Squaw Creek	GF74PM Fecal coliform	open-cut, flume
11.32	Fishtrap Creek	RN53NC Fecal coliform	conventional bore
11.86	Bender Creek	UI16IQ Fecal coliform	open-cut, flume
13.39	Double Ditch Creek	LN43IE Fecal coliform, ammonia-N	conventional bore

Source: Ecology 2003.

Terasen Gas Alternative

There is no assessment of potential stream crossings for the Terasen Gas Alternative.

No Action Alternative

There is no assessment of potential stream crossings for the NorskeCanada proposal.

Mitigation Measures

Proposed Action

No additional analysis required.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Significant Unavoidable Adverse Impacts

Assuming specialized construction techniques are used and Ecology's recommended mitigation measures are incorporated, significant adverse impacts are unlikely.

3.3.3 Issue 7: Dewatering Impacts~~2~~

Issue Summary

Description of Problem

The discussion of construction impacts in the Final EIS does not include dewatering, or water drainage, impacts. Dewatering operations could affect both surface water quantity and quality. For example, the conventional boring method for stream crossings will likely have to be accompanied by significant dewatering of the surrounding aquifer. The large pumping rates could present problems for controlling discharge water and dewatering, or severely reducing stream flow at that location and downstream.

Ecology Requirement

Include a more thorough analysis and discussion of the potential effects of dewatering activities on surface water and groundwater in the environmental review, including impacts on stream flows.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

Water would be pumped out of the trench and discharged to the ground in a manner that does not cause erosion or allow unfiltered flow into wetlands, streams, or lakes. To achieve this, water pumped out of the trench would be discharged to a well-vegetated upland site through a temporary dewatering structure such as hay bales or a filter bag. Water would not be pumped directly to surface waters. Dewatering would never exceed 10% of the receiving water volume (Williams Pipeline Company 2003).

Terasen Gas Alternative

There is no assessment of potential dewatering impacts for the Terasen Gas Alternative.

No Action Alternative

There is no assessment of potential dewatering impacts for the NorskeCanada proposal.

Mitigation Measures

Proposed Action

No additional analysis required.

Terasen Gas Alternative

There is no assessment of potential dewatering impacts for the Terasen Gas Alternative.

No Action Alternative

There is no assessment of potential dewatering impacts for the NorskeCanada proposal.

Significant Unavoidable Adverse Impacts

No additional analysis required.

3.3.4 Issue 8: Open-Cut Alternative~~3~~

Issue Summary

Description of Problem

Recommendations regarding the open cut method as a crossing alternative are not discussed in the contingency plan.

Ecology Requirement

If the proposed action alternative is approved, there will be substantial pressure from GSX-US to quickly approve the decision for the open-cut method. Have the contingency plan in place before construction begins, and describe it in the environmental review.

Affected Environment

GSX-US prepared "Request No. P1," dated May 7, 2003, which eliminates the option for an open cut at Cherry Point. The request cites reports by two geotechnical engineering companies and bids from five drilling firms, which conclude the HDD method has a probability of success of almost 100%. GSX-US states that the contingency or alternative to the proposed HDD method is additional attempts at the HDD. The Applicant also acknowledges that in a May 22, 2003, meeting with representatives from Ecology, Whatcom County, and the Corps, it was formalized that an open cut, even if proposed, was not permittable.

The issues relating to an open-cut method are substantial, and include impacts on hydrology, vegetation, geology, wildlife, intertidal habitat (including local herring habitat), beach habitat, and visual impacts. Therefore, an open cut is not considered a viable alternative to the HDD.

Impacts

GSX-US

GSX-US is not requesting approval for an open cut for the marine entry because the HDD method is the one that will be used to install the pipeline near Cherry Point, Washington. Based on its own extensive studies, GSX-US has concluded that the HDD shore approach at Cherry Point is achievable with nearly 100% probability of success and is the primary and preferred method for the GSX pipeline shore crossing.

The contingency or alternative to the proposed HDD is additional attempts at the HDD. In the unlikely event that a first attempt would fail, after an analysis to determine the details of the failure and to make revisions as necessary to mitigate the failure possibilities, a second HDD attempt would be made. If the second attempt were to fail, after additional analysis to determine the details of the second failure and to make additional revisions as necessary to mitigate the failure possibilities, a third attempt would be made. The probability of success of one of the three attempts is almost guaranteed. Additional engineering analysis and HDD attempts would be completed as necessary to install the GSX-US pipeline at the shoreline.

GSX-Canada

Potential marine environmental effects associated with the HDD for the GSX-Canada project primarily relate to the permanent loss or temporary disturbance of eelgrass habitat. The major impact area would be near the HDD exit hole where suspended sediment and bentonite drilling muds could be transported to nearby eelgrass. Sustained high suspended sediment levels could impair ecological function. Concerns were also expressed about potential effects on nearshore habitat from vessel operation and anchoring. In addition to suspended sediment, concerns were expressed about the potential toxicity of the drilling mud and the viscosifer agent to be used at the HDD exit hole.

If the Vancouver Island shoreline crossing cannot be accomplished using HDD, a partial HDD or full open-cut method would be used. These methods would raise many of the environmental issues the HDD is intended to avoid. The partial HDD and the full open cut would require excavation through the aquatic shoreline area including shallow subtidal and intertidal zones.

For a full open cut, forest cover on the slope would be cleared from the right-of-way (ROW) and a dragline or equivalent excavator would be used to dig the trench. Without intensive bank stabilization and reclamation effort following full open-cut construction, there could be chronic erosion and increased aquatic shoreline siltation and turbidity. This outcome would result in proportionately more long-term effects on marine vegetation (National Energy Board 2003).

<u>Terasen Gas Alternative</u>

Looping of the existing Terasen Gas pipeline will involve crossing a number of small streams and two major rivers: the Indian River and Squamish River. The two river crossings will be accomplished with directional drilling, the technique used to install the current pipeline in 1989. Potential impacts associated with these crossings are expected to be similar to those for the GSX-US and GSX-Canada projects. However, the Terasen Gas proposal does not call for the crossing of any marine shoreline (Terasen Gas 2003).

<u>No Action Alternative</u>

The NorskeCanada proposal does not call for pipeline construction.

Mitigation Measures

<u>GSX-US</u>

Because a partial or full open cut is not proposed at Cherry Point, a contingency mitigation plan has not been proposed.

<u>GSX-Canada</u>

In the event of a failed HDD, the Joint Review Panel accepted the reclamation and restoration measures outlined in GSX-Canada's contingency plan for a partial HDD or open cut. However, to ensure potential effects are managed during construction, the panel recommended that GSX-Canada not proceed with the partial HDD or open-cut method without developing a detailed site-specific crossing plan and an eelgrass monitoring plan that receives approval from the National Energy Board. The panel concluded that, with the implementation of GSX-Canada's proposed mitigation measures and the panel's recommendation, significant adverse environmental effects of a partial HDD or open cut would be unlikely (National Energy Board 2003).

Terasen Gas Alternative

Terasen Gas's existing pipeline corridor was chosen in 1989 on the basis of geotechnical, environmental, land use, and property ownership considerations consistent with current route selection techniques. Geotechnical considerations were particularly important in the selection of the original route. These considerations included topography, surficial geology, surface and subsurface drainage, and slope stability. The selection of the best route from a geotechnical standpoint was important to minimize erosion and sedimentation problems. The original crossing of the Squamish River, considered to be the most environmentally sensitive crossing, successfully used the directional drilling technique. The results of Terasen Gas's original studies and construction techniques would be applied to the proposed pipeline loops.

No Action Alternative

The NorskeCanada proposal does not call for pipeline construction.

Significant Unavoidable Adverse Impacts

No additional analysis required.

3.3.5 Issue 9: Wet Ditch/Dry Ditch Methods4

Issue Summary

Description of Problem

The Final EIS does not elaborate on or evaluate criteria for wet ditch versus dry ditch excavation. Rather, it indicates that this would occur at some future time "prior to construction." High flow volumes are identified as one of the conditions where wet ditch excavation may be required. These are also the conditions that would have the highest potential for water quality impacts. Criteria for decisions and the potential impacts of these decisions need to be addressed in more detail and cross-referenced to the evaluation of fisheries impacts.

Ecology Requirement

Discuss the criteria to be used for selecting the wet ditch method in the environmental review and expand discussion of the impacts of that approach.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

The wet ditch method or "open cut, flowing" technique installs the pipe while stream flow is maintained in the channel. Prior to trench excavation in the waterbody, the pipe string is fabricated in an upland area and all materials are staged. A temporary bridge is installed to allow workers and equipment to cross the channel. Erosion-control measures are installed to prevent siltation of the stream from soil stockpiles and construction activities outside the streambank.

Excavation is accomplished using conventional hydraulic excavation equipment. The trench is excavated on both sides of the stream, leaving "plugs" or hard soil in place to prevent the stream from entering the excavation. At this point, instream excavation begins, using one or two pieces of excavating equipment depending on the width of the stream; excavation in very narrow streams will be completed using one trackhoe. Excavated spoils will be stockpiled at least 10 feet from the stream and protected with erosion-control devices to prevent silt-laden water from entering the stream. Pipe is then placed into the trench and backfilling begins. Backfilling begins in the center of the trench and moves outward to the banks. This method forces silt-laden water to the ditch outside the stream channel; however, some silting of the stream will naturally occur (Williams Pipeline Company 2003).

GSX-US will use native materials to backfill instream ditches. Clean, washed gravel will overlay disturbed native material in fish-bearing and 303(d)-listed streams.

Terasen Gas Alternative

There is no assessment of potential crossing methods for the Terasen Gas Alternative.

No Action Alternative

No additional analysis required.

Mitigation Measures

Proposed Action

Ecology has recommended the use of clean gravel in the upper 12 inches of backfill to stabilize the trench and reduce sedimentation. This recommendation has been incorporated into the Wetland and Riparian Restoration Plan for fish-bearing and 303(d)-listed streams.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Significant Unavoidable Adverse Impacts

Assuming proposed construction techniques are used and Ecology's recommended mitigation measures are incorporated, significant adverse impacts are unlikely.

3.3.6 Issue 10: Equipment Impacts in Waterbodies~~5~~

Issue Summary

Description of Problem

The Final EIS does not adequately discuss the potentially significant adverse impacts of operating or driving clearing equipment through perennial waterbodies. Modern technology for temporary bridges makes driving equipment through waterbodies almost completely unnecessary. A recommendation to avoid is not sufficient to protect water quality or fisheries resources.

Ecology Requirement

Where no bridge exists, construction of a bridge would result in vegetation clearing at a minimum and could result in in-water work. Impacts associated with these crossings need to be identified and mitigation proposed for those impacts.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

FERC Environmental Condition No. 14 prohibits equipment crossing through perennial waterbodies unless otherwise approved by FERC in the Implementation Plan. GSX-US will not propose equipment crossing (fording) through perennial streams. GSX-US has revised its Wetland and Waterbody Crossing Procedures to state that clearing crews shall avoid fording perennial streams. All stream crossings will use portable bridges, which are narrow enough to allow bridge installation from one side without fording the stream. No in-water work will be necessary for portable bridge installation. Impacts on riparian areas and proposed mitigation are presented the draft Wetland and Riparian Restoration Plan (GSX-US 2003).

Terasen Gas Alternative

There is no assessment of operating or driving clearing equipment through perennial waterbodies for the Terasen Gas Alternative.

No Action Alternative

The NorskeCanada proposal does not involve pipeline construction.

Mitigation Measures

Proposed Action

No additional analysis required.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Significant Unavoidable Adverse Impacts

No additional analysis required.

3.3.7 Issue 11: Open-Cut Crossing Impacts~~6~~

Issue Summary

Description of Problem

The Final EIS does not provide justification for why open cut crossings of 303(d)-impaired waterbodies would not have an adverse effect. Discussion states that, "we do not believe that using the open-cut crossing methods would increase the water bodies' impairment," but no justification is provided for this statement.

Ecology Requirement

Provide supporting documentation for the conclusion that open-cut crossings would have no adverse impacts in the environmental review.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

The GSX project crosses six waterbodies that are listed on the 303(d) as impaired (see Table 3~~.3~~-1). Of the six waterbodies listed, three would be crossed using HDD or conventional bore trenchless techniques to avoid possible resuspension of contaminated sediments. The other three streams would be crossed by open-cut methods. GSX-US proposes to cross the tributary to Johnson Creek at MP 5.5 with the open cut, wet ditch technique, and Squaw and Bender creeks with the open-cut, flume technique, which is described in detail below.

The decision to install the pipe using the open-cut method would only be made after all other reasonable alternatives have been exhausted. For these waterbodies, the probability of success for installing pipe with an HDD or conventional bore is very high. GSX-US is requesting approval to install using the open cut method only as a contingency plan with a very low likelihood of its use.

There is not a hard and fast rule for the number of times an HDD or conventional bore is attempted before the decision is made to use the open cut method. Factors that may be considered in this decision are the specific cause of the failure and the soil conditions encountered.

For example, the corrective measure may involve a determination that the existing hole encountered a void, which could be bypassed with a slight change in the profile. In other cases, it may be determined that the existing hole encountered a zone of unsatisfactory soil material and the hole may have to be abandoned. In this case, it may be possible to use an alternate adjacent alignment contained in the right-of-way to drill a new hole.

The open-cut, flume technique involves diverting stream flow into a carefully positioned steel pipe of suitable diameter to convey the entire flow of the stream.

Instream construction activities are generally limited to:

- Polyethylene sheeting at flume pipe inlet and outlet points;
- Diversion structures/flume support consisting of sandbags; and
- Baffle structures to dissipate flow energy at the flume pipe outlet.

The installation method begins with one diversion structure being placed at the upstream end of the flume pipe to guide all of the stream flow into the pipe and a similar downstream dam placed to prevent water from backflowing into the "dry" section. Once stream flow is being conveyed through the flume pipe, activities for installing the pipeline begin.

Conventional pipeline trench installation is accomplished using hydraulic excavation equipment beneath the flume pipe. This technique allows turbidity associated with trenching to be kept between the dams with no interruption to the downstream flow and volume of the stream. Excavated material is moved away from the crossing and stored for subsequent backfilling. Some seepage of water into the area between the dams occurs from subsurface flow and/or some leakage around and under the temporary dams. This is pumped out as needed into an upland dewatering structure for retention until the sediment settles out and/or the water percolates into the ground. The flume pipe and dams are removed after the pipeline has been installed.

Before the flume pipe is installed in the stream, it would be inspected to ensure it is free of grease, oil, or other pollutants. In addition, excessive dirt would be removed from the flume pipe. The pipe would be steam-cleaned, if necessary, to remove any oil or grease present on the pipe before placement in the stream.

Short-term, elevated levels of turbidity are expected to occur during installation of the flume pipe. However, several measures would be taken to minimize the increased turbidity. Both the inlet and the outlet of the flume pipe would be lined with sandbags and plastic to create a proper seal. The reason for sandbagging the downstream end of the flume is to create a contained area where turbid water is trapped and to prevent downstream water from flowing up the streambed and flooding the trench. Sandbags would be filled with a non-leachable material such as clean, pre-washed sand. Sandbags would be tied securely before they are installed. Sheets of plastic would be interwoven between the layers of sandbags to ensure an effective seal.

Before the flume pipe is installed, at least three rows of sandbags (the dam foundation) would be laid to support the upstream and downstream portions of the flume pipe. All instream work would be carried out on foot and no equipment would operate in the streambed. After the dam foundation is in place, the flume pipe would be lifted over the stream and carefully aligned before it is lowered onto the sandbags. The flume pipe would not be pushed or pulled over the banks and into the water. After the flume is laid on the sandbags, construction on the upstream dam would immediately begin, followed by installation of the downstream dam.

Prior to trenching, any fish in the work area would be removed and released downstream. Removal would be done with seines and fine-mesh dip nets. Two trackhoes would begin trenching from each streambank at the same time and the pipe would be installed as soon as the trenching is complete. Excavated spoils would be stored at least 10 feet away from the stream along the trench and protected with erosion-control devices. The volume of work area that needs to be dewatered is much less for flume crossings than for bore crossings. Groundwater and some seepage of surface water around the dams may enter the trench area and become turbid as the trench is being excavated. The turbid water would be pumped out of the trench area so that it would not accumulate and flow around the downstream dam into the live stream.

The highest potential for causing water quality problems during a flumed crossing is during backfilling of the ditch. If the ditch is backfilled too quickly, the water level in the construction area may overflow or leak over the downstream dam. Pumps must be carefully used during backfilling to control the water level in the construction area, and backfilling must be conducted in a slow, well-planned manner.

Backfilling begins in the center of the stream directly under the flume pipes and proceeds toward each bank simultaneously. In this manner, much of the water in the ditch would be pushed to the ditch outside the stream channel. When complete, the streambed would be compacted and trench plugs would be installed on both sides of the stream. The instream work area would be fully stabilized prior to removing the flume.

To prevent excessive increases in turbidity during flume removal, the sandbags must also be removed in a controlled, well-planned manner. Sandbags would be removed from the downstream dam first, followed by the upstream dam at a rate dependent on the size and flow of the stream. There would be an initial increase in turbidity downstream of the crossing. However, the water would quickly flow clear again over the construction area. The flume pipe would be lifted out of the crossing area, and the remaining sandbags would be removed by hand.

Additional measures taken to minimize impacts near the stream crossing include using a crew whose sole responsibility is maintenance of the flume. They would have supplies on hand enabling them to apply additional plastic and sandbags to the dams, maintain and operate the pumps, and maintain the discharge structures. When the crossing is complete, the crew's task would be to immediately install erosion-control structures. Pumps and backup pumps would be located in a spill containment structure designed to fully contain any spills of fuel or oil. Backup pumps would be located onsite, hooked up and maintained as fully operational during the entire crossing process. All water would be discharged through dewatering structures, which are essential in preventing the flow of turbid water overland and back into the stream. Runoff-control structures would be used to prevent runoff from the spoil piles or drainage from the trackhoe bucket from flowing around the sandbag/plastic dams and adding sediment to the stream.

Some of the advantages of a flume crossing include:

- Size of excavation;
- Spoil storage area requirements;
- Minimal dewatering;
- Decreased construction time in vicinity of stream;
- Stream flow is maintained;
- Fish passage is maintained;
- Dry/no-flow work conditions in streambed; and
- Cumulative effects of activities in project area are minimized (i.e., no need for extra work space, continuous truck transport of spoil).

There are potential disadvantages associated with a flume crossing. However, GSX-US has developed procedures to control each of the following potential disadvantages:

- Potential for short-term increase in turbidity during dam construction and removal;
- Potential for limited streambed disturbance;
- Potential for leaking dams leading to increase in dewatering requirements (Williams Pipeline Company 2003).

Terasen Gas Alternative

There is no assessment of impaired streams for the Terasen Gas Alternative.

No Action Alternative

The NorskeCanada proposal does not involve pipeline construction.

Mitigation Measures

Proposed Action

No additional analysis required.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Significant Unavoidable Adverse Impacts

No additional analysis required.

3.3.8 Issue 12: Hydrostatic Water Test Discharge~~7~~

Issue Summary

Description of Problem

The Final EIS concludes that continued erosion of the (hydrostatic testing) discharge area could occur if it is not properly stabilized after the discharges have been completed. The Final EIS further acknowledges that this is a potentially significant impact, but fails to evaluate the implications of this potential impact or offer any mitigation.

Furthermore, it is unclear how the water will be transferred to the site since it is not all downhill. Almost 99% of the hydrostatic test water (1.58 M gallons) will be discharged onshore at the GSX-US property south of the Cherry Point compressor station. There is no discussion of whether this site will be able to absorb that much discharge without erosion, water quality degradation, or other impacts.

Ecology Requirement

In the environmental review: (1) evaluate potential effects of erosion and mitigation measures and (2) include an expanded discussion of hydrostatic test water discharge to include identification of discharge sites and the area available for groundwater recharge or surface water discharge.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

Hydrostatic test water would be discharged through an approved dewatering structure and energy dissipating device in a manner to minimize disturbance to the environment. Water would be discharged from the pipeline so as not to cause erosion to the ground surface or unfiltered flow into wetlands, streams, or lakes. GSX-US would require samples to be taken of the test water prior to filling or dewatering the pipeline. Water discharge rates would be approximately 500 gallons per minute (gpm).

Two hydrostatic test water discharge sites are identified: the existing Sumas compressor station and the proposed Cherry Point compressor station.

Existing Sumas Compressor Station

The amount of water required for hydrotesting is minimal at this location and is only to be used for fabricated assemblies associated with the interconnects. Hydrostatic test water would be transferred to the test sections through the use of a hose connected to an existing hydrant located at the Sumas compressor station. All hydrostatic test water would be discharged through an approved dewatering structure located upland from an existing stormwater retention pond at the Sumas compressor station.

Proposed Cherry Point Compressor Station

This location is the main source of water for hydrotesting the onshore portion of the U.S. pipeline. Hydrostatic test water would be transferred to the test sections through the use of a hose connected to a hydrant located at the Cherry Point compressor station. All hydrostatic test water would be discharged through an approved dewatering structure located on the south side of the compressor station in a well-vegetated upland area.

The discharge site is a gently sloping, well-vegetated hay meadow that drains to a tributary of Terrell Creek located approximately 250 feet east of the compressor station site. Filtered water leaving the dewatering structure would flow through the well-vegetated upland before entering the tributary of Terrell Creek. Given this distance and the regulation of discharge rate, most of the hydrostatic test water that is discharged would be absorbed by the soils across a wide area. The primary impact would be a temporary flow increase in the tributary. Since no additives are proposed and erosion and sedimentation would be controlled by implementing Best Management Practices (BMPs), no significant impact on water quality is expected.

GSX-US delineated several wetlands west of the proposed discharge location. These wetlands are formed in areas of hill seepage and are at a higher elevation than the discharge site. GSX-US does not plan on discharging hydrostatic test water directly into these wetlands, and since they are at a higher elevation than the outfall, discharged water would not affect the wetlands.

The effect on stream flow would also be limited by controlling the rate of discharge. The main parameters to consider when discharging hydrostatic test water are the regulation of discharge rate, use of energy dissipation devices, and installation of sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive stream flow.

Discharge rate is usually controlled through the use of equipment (called a “drying pig”) that is placed in the pipeline upstream from the location where water is to be discharged. The purpose of this pig is to move the water from the upstream location to the discharge point. The pig is moved through the pipeline using compressed air at the upstream location. The rate at which water is discharged can be controlled by adjusting the flow of air into the pipeline and thus increase or reduce the rate at which the pig moves through the line. The discharge rate can also be controlled at the dewatering point by opening or closing a valve. When a pump is used in the dewatering process, its speed can be adjusted to control the discharge rate.

Typically, hydrostatic test water is discharged at a rate of 500 gpm based on the maximum capacity of a 4-inch pump. If site-specific conditions allow, GSX-US may use a larger pump (6 inches) that can discharge water at a rate of up to 1,000 gpm. As a point of reference, 500 gpm is equivalent to about 1 cubic foot per second. In light of the dissipation and buffering effects described above, discharge rates of this magnitude would be expected to have only a minimal effect on stream flow.

However, as explained above, the discharge rate can be regulated. Based on an evaluation of onsite conditions (e.g., discharge water is ponding, causing erosion outside the dewatering structure, contributing to streambed scour or suspension of sediments), the discharge rate can immediately be reduced to deal with these scenarios. In addition, the dewatering structure can be moved to an alternate location if it is determined that the water is not being sufficiently absorbed by the surrounding area. The Environmental Inspector would continually monitor the discharge to ensure that flow rates are not excessive and there are no erosion/scour problems.

Discharge of hydrostatic test water into the tributary to Terrell Creek would be regulated such that flow augmentation would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the waterbody, result in damage to the ecosystem, or adversely affect public health.

Discharged water would be directed into a dewatering structure constructed with silt fences and straw bales. The purpose of the structure is to dissipate energy, prevent erosion, and filter the test water. This type of structure has been approved for use by Washington State and federal agencies on previous projects (Williams Pipeline Company 2003).

Terasen Gas Alternative

There is no information on hydrostatic testing for the Terasen Gas Alternative.

No Action Alternative

No additional analysis required.

Mitigation Measures

Proposed Action

No additional analysis required.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Significant Unavoidable Adverse Impacts

No additional analysis required.

3.3.9 Issue 13: Cherry Point HDD Plan~~8~~

Issue Summary

Description of Problem

The Final EIS does not include a discussion of a site-specific plan for the HDD at Cherry Point. Mitigation measures are not adequately addressed/not previously disclosed. Proximity to a sensitive area (aquatic reserve) makes this a significant issue.

Ecology Requirement

Given the sensitive nature of the Cherry Point shoreline, include the site-specific plan for the HDD at this location in the environmental review.

Affected Environment

No additional analysis required.

Impacts

Proposed Action

The HDD at Cherry Point involves two areas of disturbance, one onshore drill entry hole and one offshore drill exit hole. The drill entry workspace is located in a hayfield approximately 1,000 feet away from the bluff at Cherry Point. No ground disturbance is anticipated between the entry hole workspace and the exit hole. The entry point workspace would occupy an area of about 7.7 acres. Use of the area would be temporary and the site would be returned to a hay meadow upon completion of the project.

The exit hole of the HDD is located about 2,200 feet away from the nearest area of marine vegetation. At Gulf Road, GSX-US proposes several measures as described on pages 3-70 and 3-72 of the Final EIS. Further protections are provided by implementation of two biological windows established by Washington Department of Fish and Wildlife (WDFW), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) that further restrict the timing of HDD activities (refer to page 3-70 of the Final EIS). The Corps has indicated adherence to these timing restrictions is a condition of Clean Water Act authorization.

The purpose of the exit hole is to capture the drilling mud and to provide a surface that conforms to the seabed so that the pipeline does not incur overstress at the exit point. Excavation of the exit hole would result in about 1,946 cubic yards of sediment disturbance. Suspended sediments would settle back to the seafloor within a few hours of excavation. The dimensions of the exit hole would be approximately 172 feet long and 3 to 16 feet deep. Given the nature of current patterns in the area, the Final EIS concluded there is little probability that sediment would travel upslope (toward the shore) and affect macrophytes in the shallow water area.

A total of 62.1 acres of wetland would be affected by construction of the project. Of this total, 0.76 acre of palustrine emergent wetland is located within the entry hole workspace. This emergent wetland would be temporarily affected by construction, but would be restored to pre-construction conditions.

Impacts from the HDD at Cherry Point would be localized (entry and exit workspace only), temporary (e.g., limited to the duration of construction; recolonization by benthic organisms would occur within one to two years), and would not result in significant impact. However, the Final EIS acknowledges that an inadvertent release of drilling mud could affect marine vegetation if the release occurred within the bands of marine vegetation. Geotechnical studies conducted by GSX-US demonstrated that the overlying sediments are such that a release to the seafloor is considered unlikely. FERC requires GSX-US to conduct a post-construction survey to quantify any impact of drilling mud on marine vegetation and consult with WDNR, WDFW, NMFS and other applicable agencies to develop suitable mitigation for observed impacts.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Mitigation Measures

Proposed Action

No additional analysis required.

Terasen Gas Alternative

No additional analysis required.

No Action Alternative

No additional analysis required.

Significant Unavoidable Adverse Impacts

No additional analysis required.